

## ABSTRACT

A Real-Time Optical Correlating System produces holograms that contain both amplitude and phase information and have none of the time constraints of the traditional holographic methods. It has been demonstrated to operate at television field rates (60 Hz) employing currently available devices of moderate resolution. Using the System, the holographic matched filter of an input scene is calculated optically as an analog sum, captured by a charge-coupled device (CCD) camera and transmitted directly or through a computer to and displayed on a commercially available liquid crystal display (LCD) device. The correlation plane may be viewed immediately on a suitable screen because there is no film to process or computer calculations to be performed. Concurrently with the creation of the holographic matched filter of the input scene, a Fourier transform of a test scene is produced and both are imaged on another charge-coupled device camera for any correlation between the input and test scenes.

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